

Maricopa County Department of Public Health



2006 Outbreak Summary Report

Submitted By

Office of Epidemiology & Data Services

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The purpose of this report is to provide a general overview of the disease outbreak investigations that were reported during 2006 in Maricopa County, Arizona. For a more detailed description on the methodology followed in the investigation of outbreaks, please see the 2004 Outbreak Summary Report on the website:

http://www.maricopa.gov/Public_Health/EPI/pdf/2004OutbreakReport.pdf.

Reporting requirements

In Arizona, health care providers (HCP), health care institutions (HCI), correctional facilities (CF), childcare establishments (CCE), administrators of schools, and shelters are all required to report outbreaks of infectious diseases to the Local Public Health Authority (see Table 1) under Arizona Administrative Code A.A.C. R9-6-203 and ARS Title 36. Also, hotel, motels, and resorts are required to report contagious or epidemic diseases occurring in their establishments within 24 hours under Arizona Revised Statutes Title 36, Chapter 6, Article 2.

Table 1. Diseases requiring outbreak notification within 24 hours

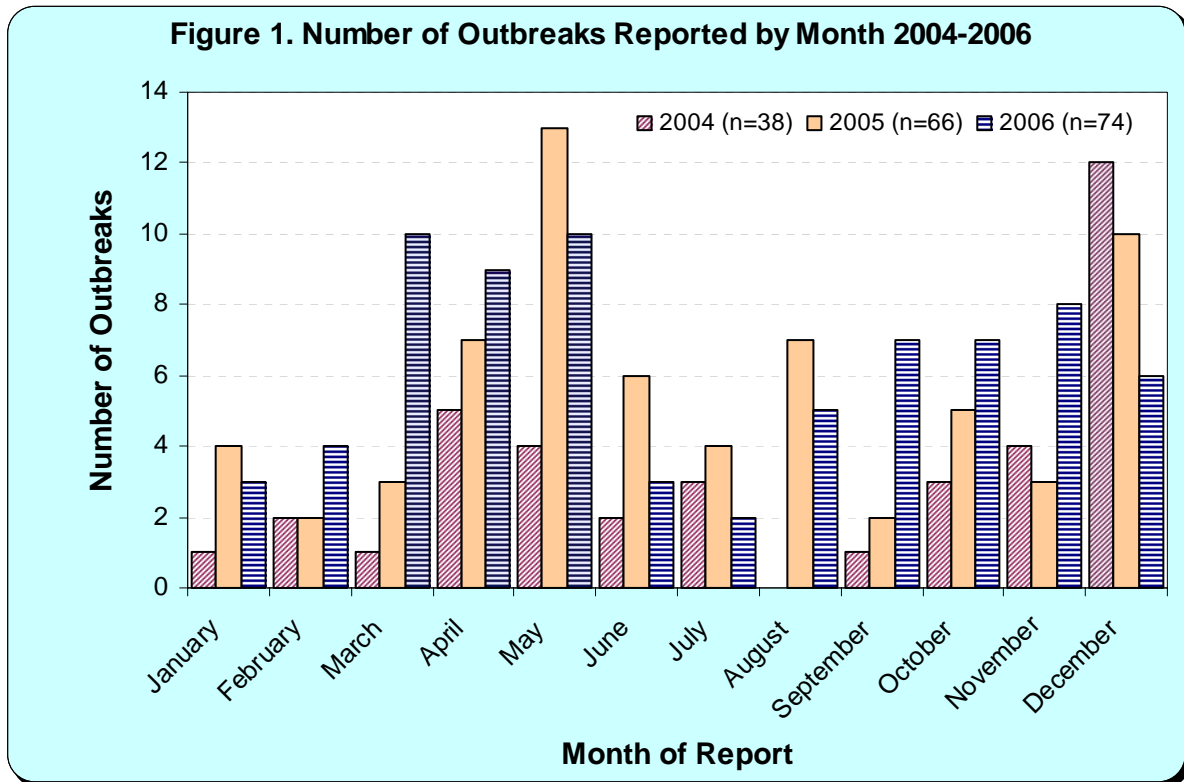
Disease/Condition	Reporting by HCPs, HClS, and CFs	Reporting by Schools, CCEs, and Shelters
Amebiasis	X	
Campylobacteriosis	X	
Conjunctivitis: acute	X	X
Cryptosporidiosis	X	
Diarrhea, Nausea, or Vomiting	X	X
Giardiasis	X	
Hepatitis A	X	
Hepatitis E	X	
Salmonellosis	X	
Scabies	X	X
Shigellosis	X	
Streptococcal Group A Infection		X
Taeniasis	X	
Vibrio Infection	X	
Yersiniosis	X	

Results

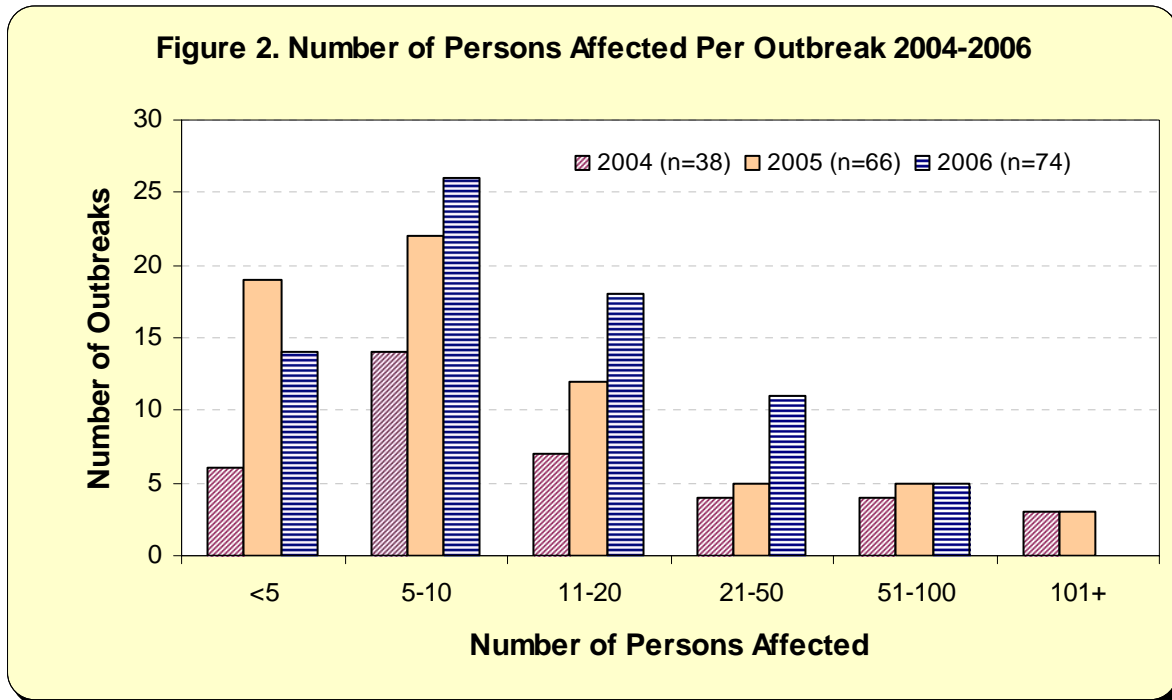
In 2006, 74 outbreaks were investigated by the Maricopa County Department of Public Health (MCDPH). The following sections summarize these data. For comparison purposes, data from 66 outbreaks that occurred in 2005 and 38 outbreaks that occurred in 2004 have been included.

In 2006, 74 outbreaks were reported to MCDPH, or an average of 6.2 per month with a range of 2-10 per month. This represents an increase over the previous two years. In 2005, the total was 66, an average of 5.5 per month, with a range of 2-13 per month. In 2004, the total was 38, an average of 3.2 per month, with a range of 0-2 per month.

As shown in Figure 1, the pattern of outbreaks is a bimodal curve with peaks in late spring and winter months.



The median number of persons affected per outbreak in 2006 was 10 (range 2-78); while in 2005 the median number of persons affected per outbreak was 7 (range 2-138); and in 2004 the median number of persons affected per outbreak was 10 (range 2-390). In 2006, 58 of the 74 outbreaks (72%) involved 20 or fewer persons (see Figure 2).



In 2006, the percentage of all outbreaks of unknown etiology was 38%. In 2005, this was 50%, and in 2004 this was 37%. Of the 28 outbreaks of unknown etiology in 2006, 26 were gastrointestinal in nature and the remaining two were rash illnesses. The pathogen of interest remained unknown for a variety of reasons including failure to obtain specimens for testing, outbreaks which were reported too late for testing, and testing which did not identify a pathogen. Table 2 summarizes the number of outbreaks by pathogen for the past three years.

Table 2. Number of Outbreaks by Etiology

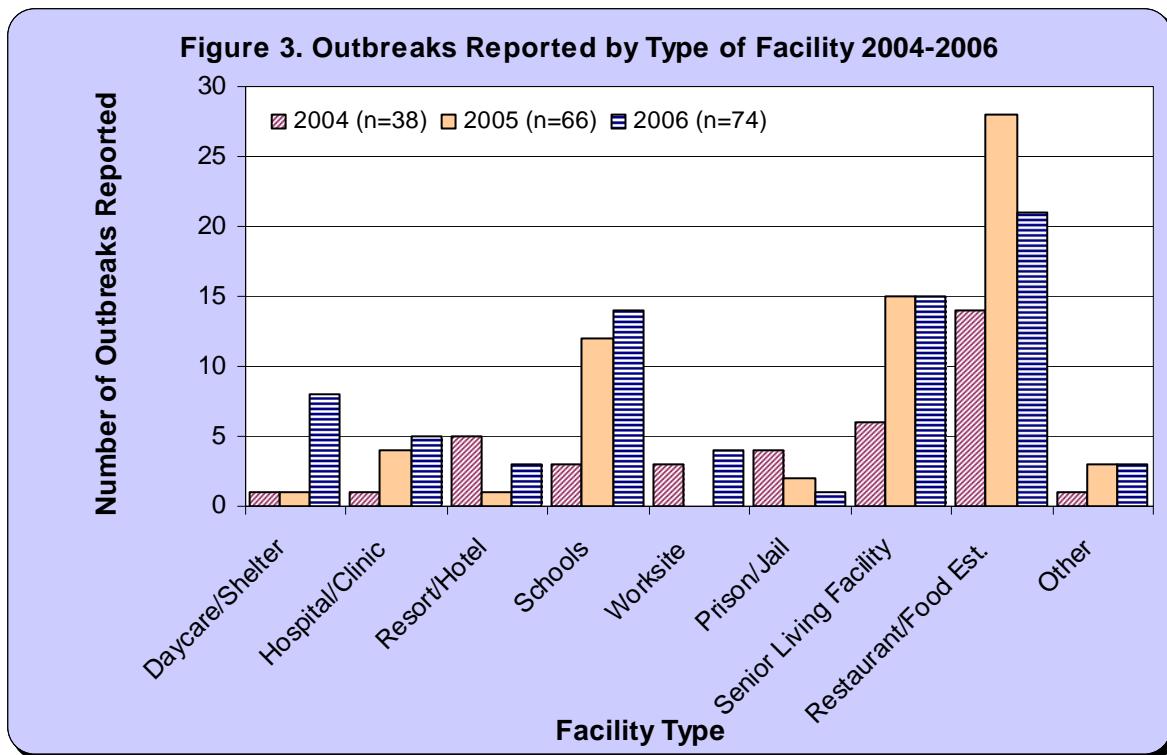
Etiology of Outbreaks	2004	2005	2006
Conjunctivitis	0	2	5
E. coli O157:H7	0	0	1
Giardia	0	0	1
H. pylori	1	0	0
Head Lice	1	1	0
Hepatitis A	0	0	1
Influenza	0	2	0
Influenza-like Illness	0	3	1
Legionella	0	0	0
MRSA	0	0	2
Norovirus	12	13	21
Parvovirus B 19 (5th Disease)	0	1	0
Pneumonia	0	1	0
Salmonella	1	0	0
Scabies	3	6	7
Shigella	1	1	2
Staphylococcus (Skin Infections)	0	0	1
Strep pneumonia	0	1	0
Unknown (GI)	15	33	26
Unknown (Rash)	0	0	2
Varicella	3	2	4
Viral Gastroenteritis	1	0	0
Total	38	66	74

While a specific etiology is often not determined, most outbreaks can be broadly classified based on the symptoms exhibited by cases. From 2004 through 2006, the majority of outbreaks investigated by the MCDPH were gastrointestinal in nature (see Table 3). The “Other” category includes conditions such as conjunctivitis and head lice.

Table 3. Type of Outbreaks

Outbreak Type	2004	2005	2006
Gastrointestinal	30	47	51
Respiratory	0	7	1
Rash	7	9	17
Other	1	3	5
Total	38	66	74

As shown in Figure 3, more outbreaks in schools and daycare centers were reported in 2006 compared to previous years while the number of restaurant outbreaks reported in 2006 declined. Despite this decline, the largest number of reports for any one category were for restaurants, followed by senior living facilities (assisted living/long term care facilities/senior apartments), and then schools. The “Other” category includes caterers and private residences.



As indicated in Figure 4, gastrointestinal (GI), respiratory and rash collectively accounted for 69 of 74 (93%) of all outbreaks reported in 2006. GI outbreaks were prevalent in all but jail facilities, accounting for 51 of 74 (69%) of the total outbreaks reported. The GI outbreaks in 2006 were predominately reported in restaurants/food establishments. The “Other” category in Figure 4 includes head lice and conjunctivitis outbreaks.

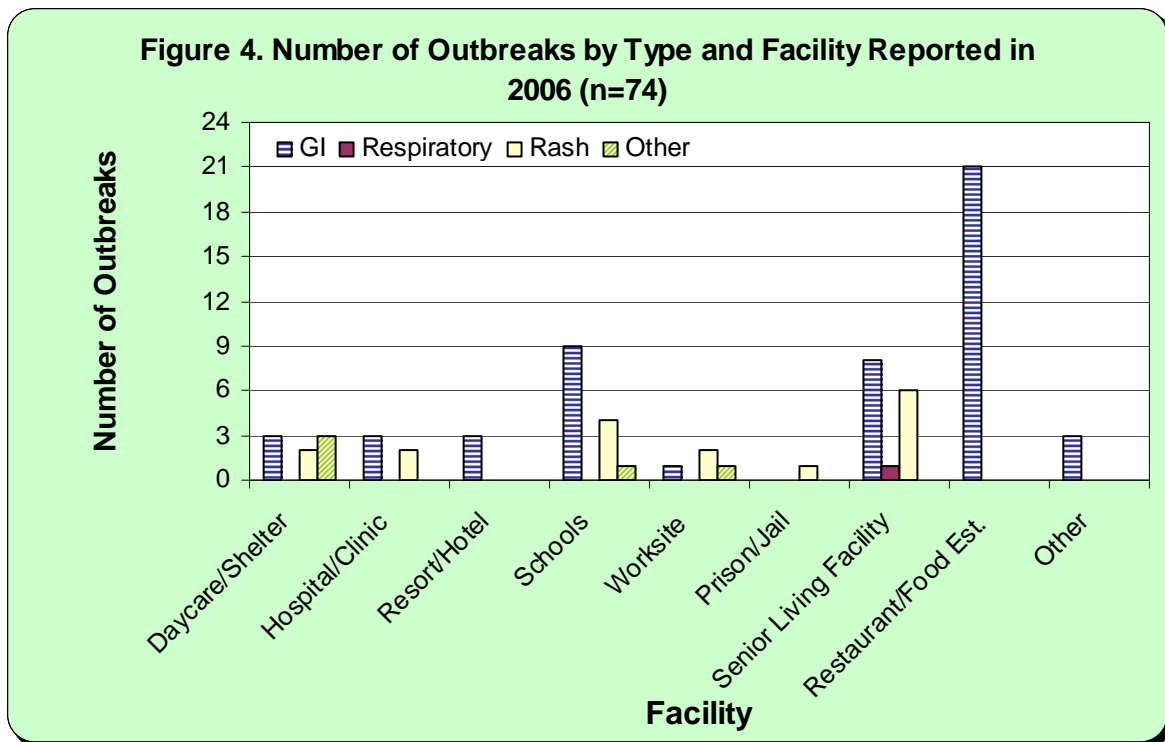


Figure 5 illustrates the GI outbreaks in 2006 by type of facility. Figure 6 shows rash outbreaks by facility type for 2006. A chart for respiratory outbreaks is not shown as there was only one respiratory outbreak reported in 2006. This one outbreak occurred in a long-term care facility. (The other five outbreaks in 2006 were in the “other” category and are also not shown.)

**Figure 5. Percentage of GI Outbreaks per Facility 2006
(n=51)**

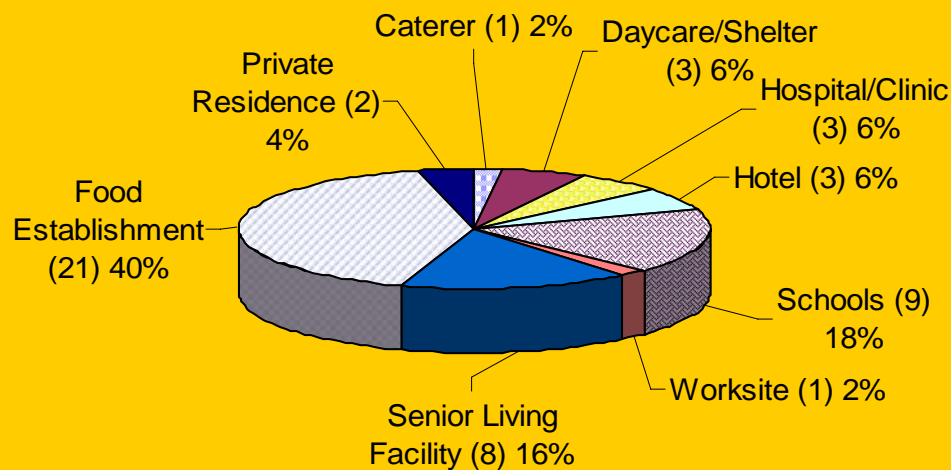
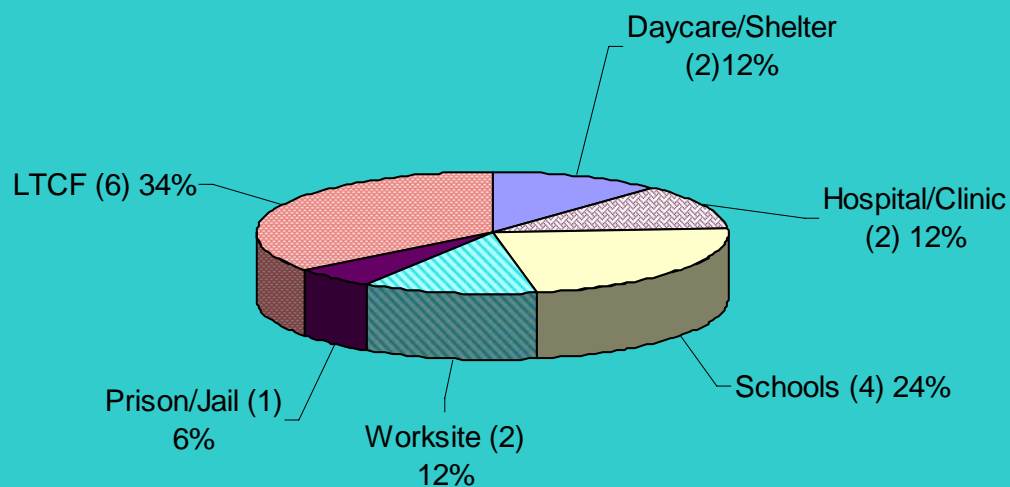


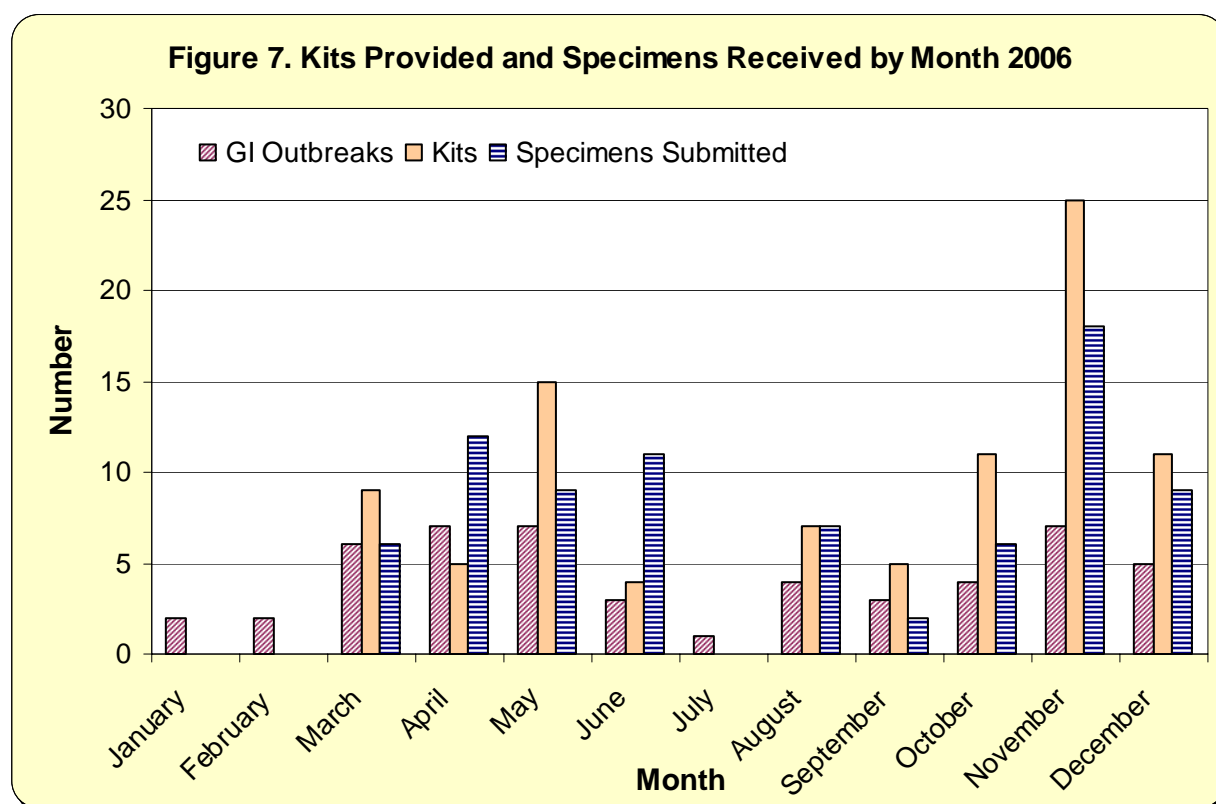
Figure 6. Percentage of Rash Outbreaks per Facility 2006 (n=17)



Specimens

For 34 of 51 (61%) of the gastrointestinal (GI) outbreaks in 2006, specimen kits were provided to cases for a total number of 92 kits and a range of 1-8 kits per outbreak. For 28 of the 51 (55%) GI outbreaks in 2006, stool specimens were received for testing at the Arizona State Laboratory. The total number of specimens collected was 80, the number of specimens collected per outbreak ranged from 1 to 7. Figure 7 shows the distribution of specimen kits provided and specimens submitted and tested in 2006. (NOTE: 10 specimen kits were provided by the hospital or healthcare facility in which the outbreak occurred.)

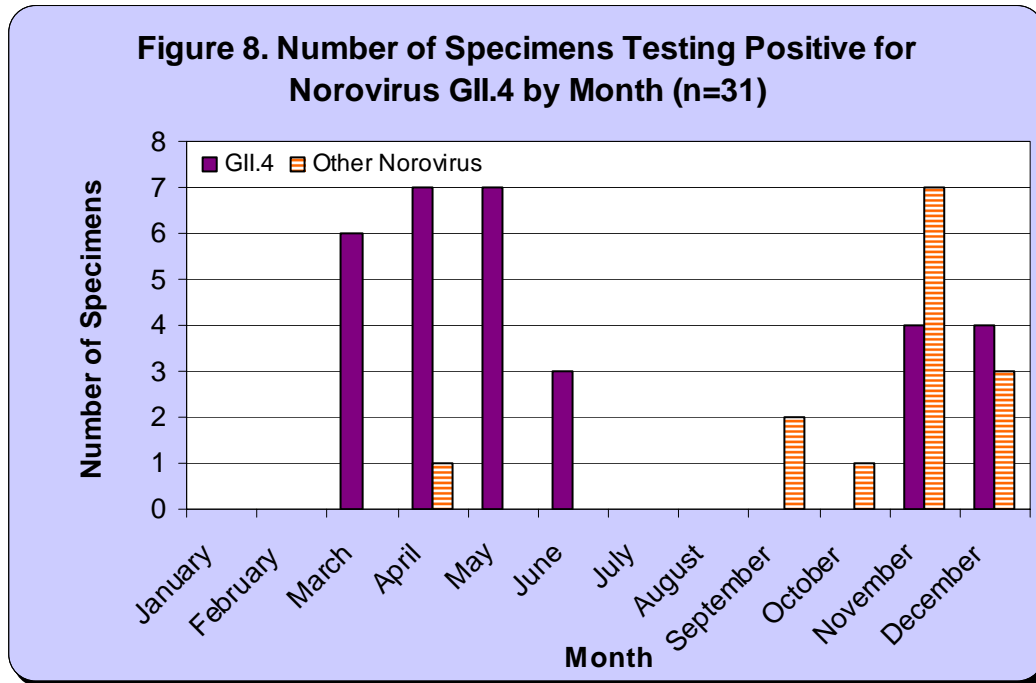
Specimens were not collected for all GI outbreaks. Reasons for not collecting specimens included too much time elapsing between the event and the report of illness and uncooperative or hard to reach cases.



The total number of outbreak-related specimens collected in 2006 was 80. The majority of specimens (n=52, 65%) were tested for Norovirus only, of those, 32 (62%) were positive, 18 (35%) were negative, and 2 (4%) were not tested or lost. Specimens were also tested for both Norovirus and bacterial enteric pathogens (*Salmonella*, *Shigella*, *Campylobacter*, and *E. coli* O157:H7) (n=22). Of those 22 specimens all tested negative for bacterial enteric pathogens and 13 (59%) were positive for norovirus. Of the remaining six specimens, two were tested for bacterial enteric pathogens; all were negative, one specimen was not tested, and three specimens were tested for *Shigella*; all were negative. Two additional specimen results were received from private labs. Both of these specimens tested positive for *Shigella*.

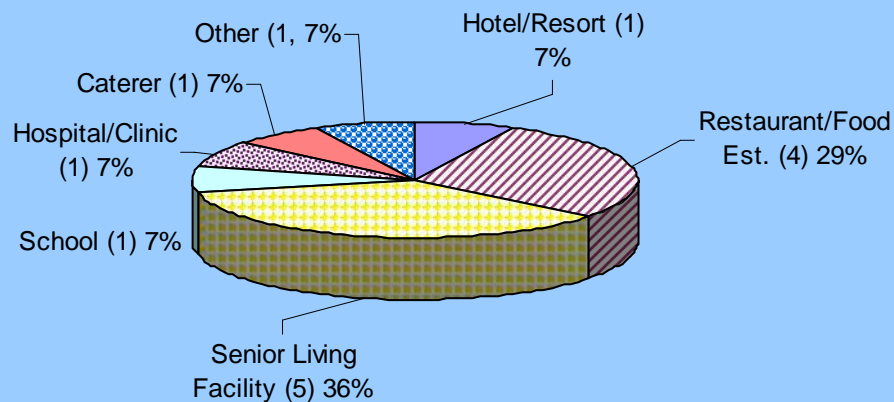
For all 45 norovirus positive specimens sequencing was obtained. Four specimens were positive for GI.4 strain, one for GII.1, one for GII.15, 31 for GII.4, seven for undetermined GI, and one for undetermined GII.

Figure 8 shows the distribution of GII.4 and other norovirus positive specimens by month. Most GII.4 specimens were submitted in the spring and early summer, while most other norovirus positive specimens were submitted in the fall and winter.

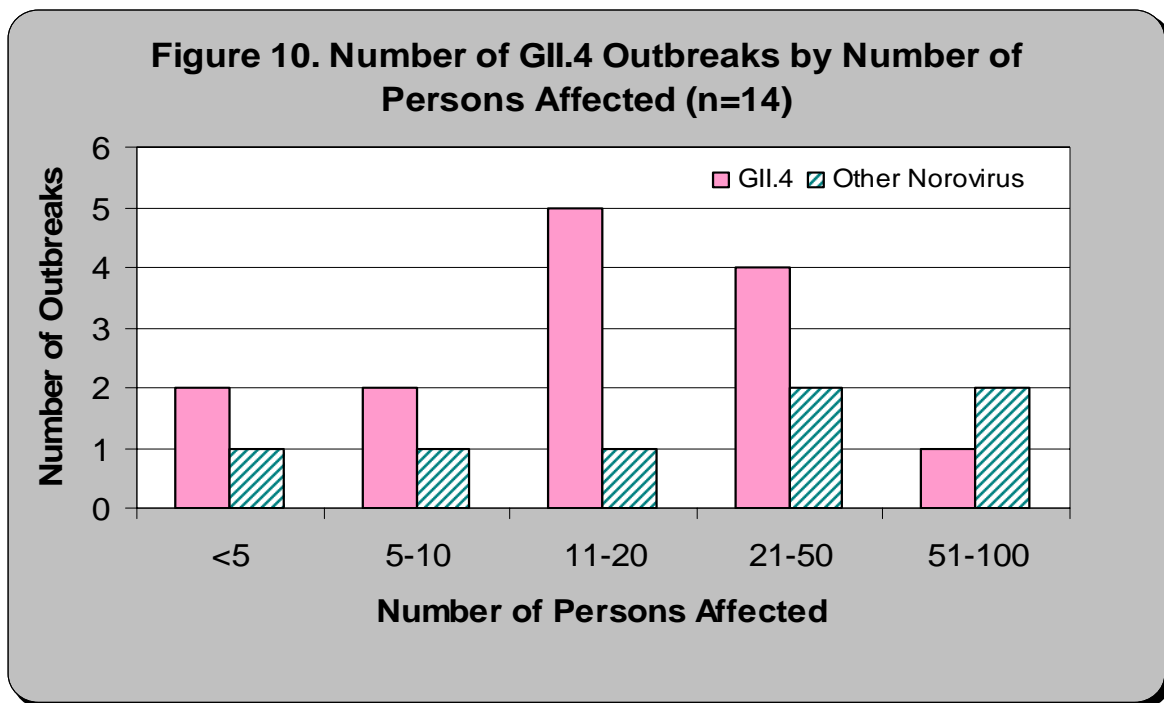


Outbreaks of norovirus GII.4 (n=14) occurred in all types of facilities, most commonly in restaurant/food establishments and senior living facilities (see Figure 9). This distribution is similar to the distribution for total gastrointestinal outbreaks, although the GII.4 outbreaks were more likely to be associated with senior living facilities (36% of GII.4 outbreaks vs. 16% of total gastrointestinal outbreaks) and less likely to be associated with restaurant/food establishments (29% of GII.4 outbreaks vs. 40% of total GI outbreaks) and schools (7% of GII.4 outbreaks vs. 18% of total GI outbreaks).

Figure 9. Number of GII.4 Norovirus Outbreaks by Facility



The number of persons affected in outbreaks of norovirus GII.4 and other norovirus strains is shown in Figure 10. GII.4 outbreaks were more likely to affect 11-20 persons than were the other norovirus outbreaks. GII.4 outbreaks were somewhat less likely than other norovirus outbreaks to involve a large number of persons (51 to 100 persons).



Summary

In 2006, there were 74 outbreaks investigated in Maricopa County. The average number of outbreaks reported per month was 6.2. The outbreaks ranged in size from 2 to 78 persons affected. In 2006, the months with the highest number of outbreaks were March and May. Most reported outbreaks affected 5-10 persons. By far the most common pathogen isolated in outbreaks was norovirus; however, 38% of outbreaks were of unknown etiology. Most investigations involved restaurants followed by senior living facilities.